User Manual
PowerRouter Solar Inverter

Operational	Grid: 2000 W
Charging	Local: 1000 W
Grid	2011 Apr 07
Error	08:19

∧ YES

∨ NO

ON / OFF

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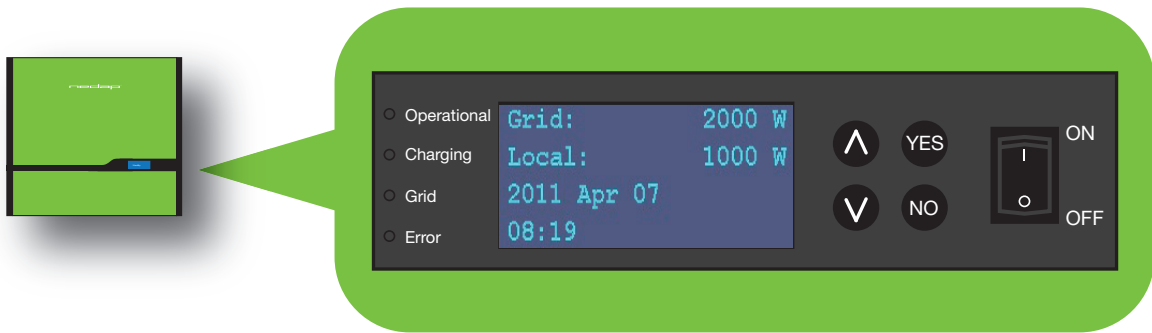
User Manual

Original instructions

Contents

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1   Introduction

1.1   Applicability

This manual is intended for users. It describes how you can safely operate the following PowerRouter types:

*   PR50S
*   PR37S
*   PR30S

1.2   Symbols used in the documentation

⚠ **DANGER**

This symbol indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **WARNING**

This symbol indicates a situation which, if the instructions are not followed, could result in injury.

⚠ **CAUTION**

This symbol indicates a situation which, if the instructions are not followed, could result in damage to the equipment.

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This symbol indicates additional information to ensure optimal operation of the system.

1.3   Warranty

PowerRouter factory warranty conditions
Our quality control program ensures that each PowerRouter product is manufactured to exact specifications and is thoroughly tested before leaving the factory.

5 year warranty
The Nedap factory warranty period is 5 years from the purchase date of the PowerRouter system. The warranty conditions are based on EU Directive 99/44/EC, without prejudice to any legal rights.

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Extended warranty

For all PowerRouter systems you can acquire a 5-year extension to the PowerRouter factory warranty, for a total of 10 years of warranty coverage. The extended warranty can only be purchased within 6 months of the PowerRouter delivery date.

Warranty conditions

If a PowerRouter becomes defective during its warranty period, one of the following services will be performed at no charge for materials, but exclusive of labour costs, at the discretion of the PowerRouter Helpdesk:

- Repair at Nedap N.V.

- Repair on site

- Exchange for a replacement unit (of equivalent value according to model and age)

Exclusion of liability

Warranty claims and liability for direct or indirect damage are excluded if arising from:

- Transport and storage damage

- Incorrect installation and/or commissioning

- Modifications, changes or attempted repairs by untrained and unauthorised personnel

- Incorrect use or inappropriate operation

- Insufficient ventilation of the device

- Failure to observe the applicable safety regulations

- Force majeure (e.g. lightning, overvoltage, storm, fire)

- Cosmetic shortcomings which do not influence the functioning of the unit

- Damage due to moisture and/or other environmental conditions

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The installer/dealer who installed the PowerRouter must report the defective PowerRouter system to the PowerRouter Helpdesk. Nedap reserves the right to replace the unit with one having equal or better specifications, at Nedap's judgement.

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2   Safety

2.1   General safety

Before using the PowerRouter, read all of the instructions, cautions, and warnings on the PowerRouter and solar panels and in this manual.

⚠ **DANGER**

- Solar panels produce electrical power when exposed to light and can cause an electric shock, energy, or fire hazard.

- The AC grid delivers electrical power (230 V, 50 Hz). This can cause an electrical shock, and it can cause an energy or fire hazard.

2.2   Symbols and labels on the equipment

There is one label on the PowerRouter:

- A type label that provides information on electrical power.

ⓘ
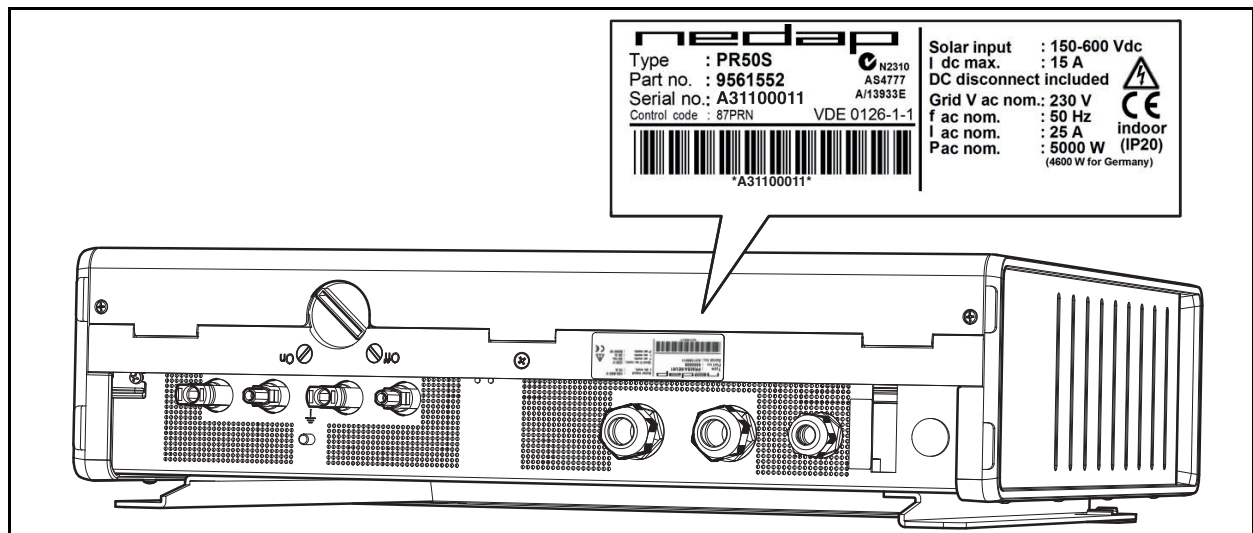
The image shows an example of the label. The labels may be different depending on the PowerRouter type.

3   General description

 CAUTION

There is no equipment or part of the equipement that can be installed or de-installed by the end-user. Installation or de-installation must be done by qualified personnel, with use of the installation manual.

3.1   The PowerRouter - intended use

The PowerRouter is a DC to AC solar inverter, designed for indoor use. It is designed for use with solar panels and connection to the grid. For more information visit www.PowerRouter.com.

The PowerRouter is compliant with the following standards:

*   2004/108/EC (EMI)
*   2006/95/EC (low voltage directive)

3.2   Internet connection

When the PowerRouter is connected to the internet the myPowerRouter.com web portal provides detailed system information (for example performance, profit, solar yield) for your PowerRouter. The PowerRouter can even be remotely updated with new firmware containing the latest features, so the system is always kept up to date.

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4   Operation - change settings

As a user you can use the display and buttons to navigate through the menu of the PowerRouter as described in this manual. We recommend that you always consult with your qualified installer, before you use the menu.

4.1   The operating display and buttons

The display shows the status, and the menu. With the buttons you can navigate through the menu, and change settings.
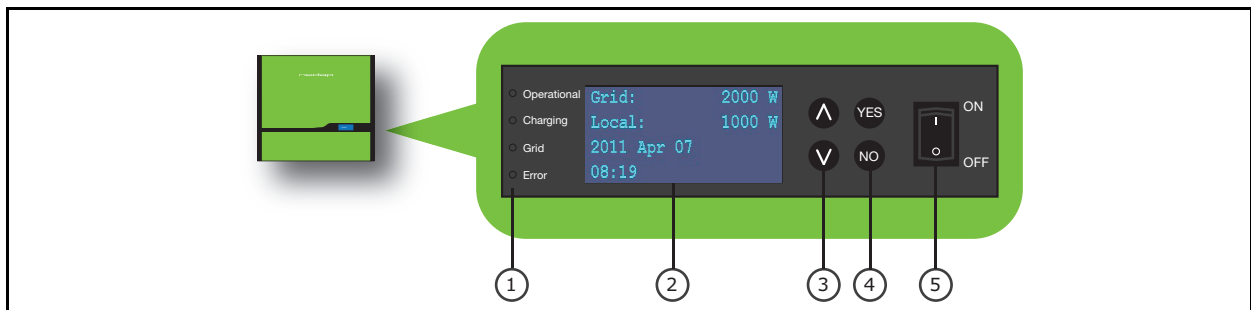
1.   Indicator LEDs (Operational, Charging, Grid, and Error).
2.   Display that shows menus and messages.
3.   Up / Down button to scroll through the menus, selection list.
4.   *Yes* - to select a sub-menu or item.
       No - to return to the previous menu, or to go back to the status display.
5.   On / Off switch.

4.2   Switch the PowerRouter on / off

Normally the PowerRouter should not be switched off. You should only switch off the PowerRouter when there are problems, and the installer tells you to switch the PowerRouter off and on.
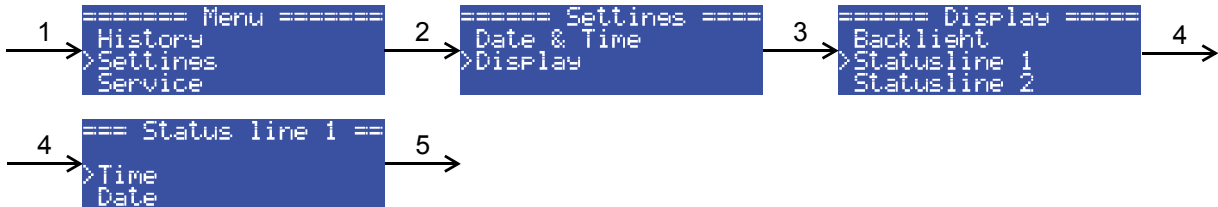
4.3   Change the language

1.   Press *yes*, and use up/down to select *Settings*.
2.   Press *yes*, and use up/down to select *Language*.
3.   Press *yes*, and use up/down to select your language.
4.   Press *yes* to activate the selected language, or *no* to cancel.
       When finished, press *no* several times to return to the to the status display.

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4.4   Change the status lines

The status lines are the default lines that are visible in the display of the PowerRouter. If you prefer different lines, you can change the setting per line via the procedure below.

1.   Press *yes*, and use up/down to select *Settings*.
2.   Press *yes*, and use up/down to select *Display*.
3.   Press *yes*, and use up/down to select *Status line 1*, *Status line 2*, *Status line 3*, or *Status line 4*.
4.   Press *yes*, and use up/down to select the desired setting.
5.   Press *yes*, to confirm the change, or *no* to cancel.
      When finished, press *no* several times to return to the to the status display.

Setting	Description
Time	Display clock time of the PowerRouter used for graphs on mypowerrouter.com.
Date	Display clock date of the PowerRouter used for graphs on mypowerrouter.com.
Day of the week	Display day of the week.
Solar power	Display Solar power (instantaneous value).
Local power	Display Local power (instantaneous value).
Grid power	Display Grid power (instantaneous value).
Yesterday´s yield	Display Yesterday´s yield to the grid.
Today´s yield	Display Today´s yield to the grid.
Week´s yield	Display Week´s yield to the grid.
Last week´s yield	Display Last week´s yield to the grid.
Month´s yield	Display Month´s yield to the grid.
Last month´s yield	Display Last month´s yield to the grid.
Year´s yield	Display Year´s yield to the grid.
Last year´s yield	Display Last year´s yield to the grid.
Total yield	Display Total yield to the grid since installation.
Total consumed	Display Total consumed to the grid since installation.
Solar yield	Display Solar yield since installation.
Self-use	Display the amount of Self-use used in your household (instantaneous value).
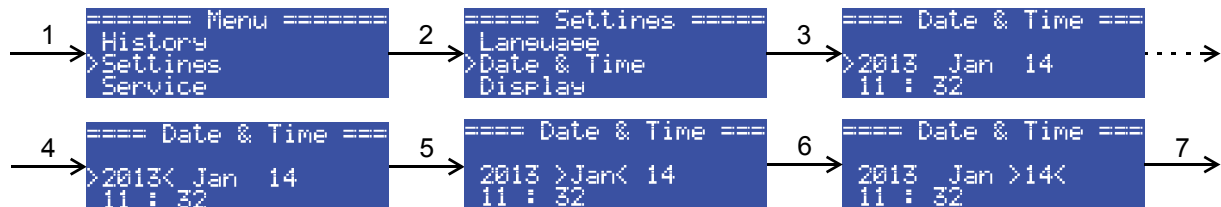
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4.5   Change the date

1.   Press *yes*, and use up/down to select *Settings*.
2.   Press *yes*, and use up/down to select *Date & Time*.
3.   Press *yes*, and use up/down to select the date.
4.   Press *yes*, and use up/down to change the year.
5.   Press *yes*, and use up/down to change the month.
6.   Press *yes*, and use up/down to change the day.
7.   Press *yes*, to confirm the change, or *no* to cancel.
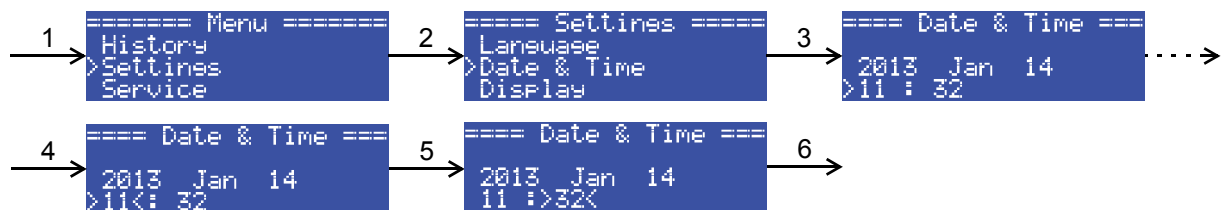   When finished, press *no* several times to return to the to the status display.

4.6   Change the time

1.   Press *yes*, and use up/down to select *Settings*.
2.   Press *yes*, and use up/down to select *Date & Time*.
3.   Press *yes*, and use up/down to select the time.
4.   Press *yes*, and use up/down to change the hour.
5.   Press *yes*, and use up/down to change the minutes.
6.   Press *yes*, to confirm the change, or *no* to cancel.
      When finished, press *no* several times to return to the to the status display.

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4.7   Change the backlight setting

The display will switch off after 120 seconds. If you prefer to have the display always on, you can change the setting via the procedure below.

1.   Press *yes*, and use up/down to select *Settings*.
2.   Press *yes*, and use up/down to select *Display*.
3.   Press *yes*, and use up/down to select *Backlight*.
4.   Press *yes*, and use up/down to select the desired setting.
5.   Press *yes*, to confirm the change, or *no* to cancel.
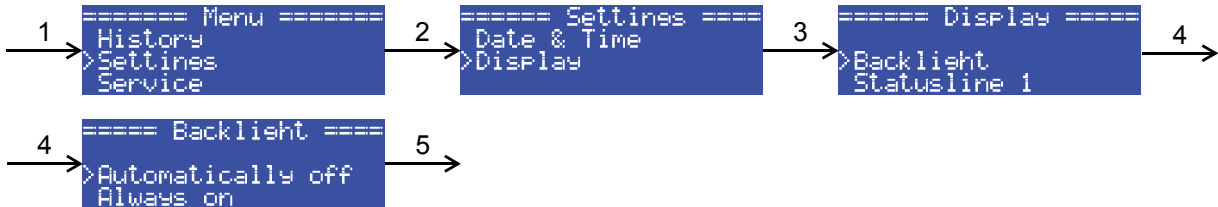   When finished, press *no* several times to return to the to the status display.

Setting	Description
Automatically off	Backlight will automatically deactivated after 120 seconds.
Always on	Backlight of the PowerRouter Display is always on.

5   Operation - check settings

5.1   Check the status of the system parameters

1.   Press *yes*, and use up/down to select *Status*.
2.   Press *yes*, and use up/down to select *System*.
3.   Press *yes*, and use up/down to navigate through the parameters.
4.   When finished, press *no* several times to return to the to the status display.

Parameter	Description
Ugrid	Grid voltage [xxx,xx V]
Fgrid	Grid frequency [xx,xx Hz]
Pgrid	Grid power [+/- xxxx W]
Plocal	Load connected to the local out of the PowerRouter [xxxx W]
Qgrid	The amount of reactive power from or to the grid [+/- xxxx W]
Cos (φ)	Cos (φ) of the Grid [0.90 -1.00]
Ustr1	Voltage of solar string input 1 [100V-600V]
Istr1	Current of solar string input 1 [0A-15A]
Ustr2	Voltage of solar string input 2 [100V-600V]
Istr2	Current of solar string input 2 [0A-15A]
Psolar	Total power of String 1 + 2 [xxxx W]
Internet	Internet connection [OK / error / 30s-0s]

5.2   Check the status of the grid parameters

1.   Press *yes*, and use up/down to select *Status*.
2.   Press *yes*, and use up/down to select *Grid*.
3.   Press *yes*, and use up/down to navigate through the parameters.
4.   When finished, press *no* several times to return to the to the status display.

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•   *For an explanation of the parameters refer to the table in section 5.1.*

•   *A negative Pgrid value means that the system supplies energy to the grid.*

5.3   Check the status of the solar parameters

1 → ====== Menu ======
    >Status
    History

2 → ==== Parameters ====
    Grid
    >Solar
    Internet connection

3 → ====== Solar ======
    Ustr1:   330.00 V
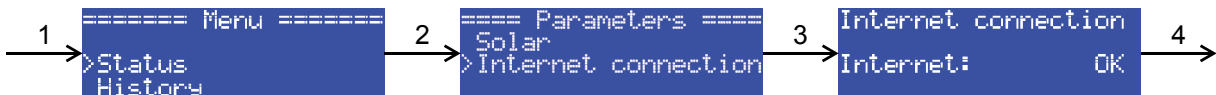   Istr1:   1.80 A
    Ustr2:   250.15 V

4 →

1.   Press *yes*, and use up/down to select *Status*.
2.   Press *yes*, and use up/down to select *Solar*.
3.   Press *yes*, and use up/down to navigate through the parameters.
4.   When finished, press *no* several times to return to the to the status display.

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*For an explanation of the parameters refer to the table in section 5.1.*

5.4   Check the status of the internet connection

1 → ====== Menu ======
    >Status
    History

2 → ==== Parameters ====
    Solar
    >Internet connection

3 → Internet connection
    Internet: OK

4 →

1.   Press *yes*, and use up/down to select *Status*.
2.   Press *yes*, and use up/down to select *Internet connection*.
3.   Press *yes* to open the internet status display.
4.   When finished, press *no* several times to return to the to the status display.

| Parameter	Description
OK	Internet is connected, an IP number is given from a DHCP server/ Internet router.
Error	No Internet connection found or the PowerRouter didn't receive any IP number.
30s-0s	PowerRouter is checking the internet with a countdown timer of 30s.

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5.5   Check the grid consumption history
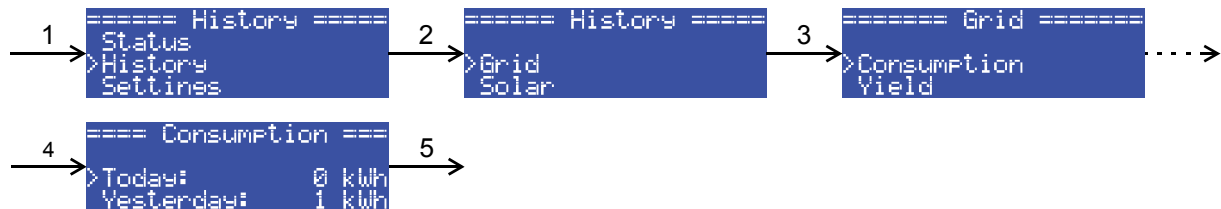
1.   Press *yes*, and use up/down to select *History*.
2.   Press *yes*, and use up/down to select *Grid*.
3.   Press *yes*, and use up-down to select *Consumption*.
4.   Press *yes*, and use up/down to navigate through the parameters.
5.   When finished, press *no* several times to return to the to the status display.

Parameter	Description
Today	Today's amount of kWh used from the grid.
Yesterday	Yesterday's amount of kWh used from the grid.
This week	This week's amount of kWh used from the grid.
Last week	Last week's amount of kWh used from the grid.
This month	This month's amount of kWh used from the grid.
Last month	Last month's amount of kWh used from the grid.
This year	This year's amount of kWh used from the grid.
Last year	Last year's amount of kWh used from the grid.
Total	Total amount of kWh used from the grid since installation.

5.6   Check the grid yield history
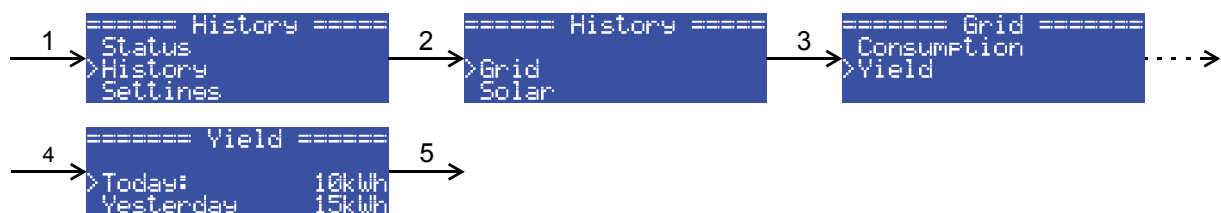
1.   Press *yes*, and use up/down to select *History*.
2.   Press *yes*, and use up/down to select *Grid*.
3.   Press *yes*, and use up-down to select *Yield*.
4.   Press *yes*, and use up/down to navigate through the parameters.
5.   When finished, press *no* several times to return to the to the status display.

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Parameter	Description
Today	Today's amount of kWh fed to the grid.
Yesterday	Yesterday's amount of kWh fed to the grid.
This week	This week's amount of kWh fed to the grid.
Last week	Last week's amount of kWh fed to the grid.
This month	This month's amount of kWh fed to the grid.
Last month	Last month's amount of kWh fed to the grid.
This year	This year's amount of kWh fed to the grid.
Last year	Last year's amount of kWh fed to the grid.
Total	Total amount of kWh fed to the grid since installation.

## 5.7   Check the solar yield history

1.   Press *yes*, and use up/down to select *History*.
2.   Press *yes*, and use up/down to select *Solar*.
3.   Press *yes* to open the solar history display.
4.   When finished, press *no* several times to return to the to the status display.

Parameter	Description
Yield	Total yield of solar since installation [kWh].

6   Operation - advanced settings

6.1   Check the service parameters
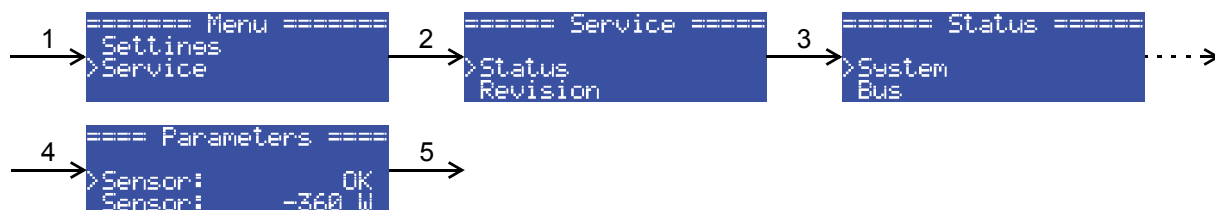
1.   Press *yes*, and use up/down to select *Service*.
2.   Press *yes*, and use up/down to select *Status*.
3.   Press *yes*, and use up/down to select *System.*
4.   Press *yes*, and use up/down to navigate through the parameters.
5.   When finished, press *no* several times to return to the to the status display.

Parameter	Description
Sensor	1-phase or 3-phase sensor is connected [OK / -].
Sensor	Power [xxxxx W].
OK?	Internet connection [OK / error / 30s-0s].
Internet	Time when internet connection was verified.
IP	IP-address of the PowerRouter given by DHCP server/internetrouter.
MAC	Unique MAC-address of the PowerRouter.
Ubus	Voltage of the internal high voltage bus [0-430V].
State	
Ext. Sign.:	1 TABCD (only for Italy)

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6.2   Check the sensor parameters

1.   Press *yes*, and use up/down to select *Service*.
2.   Press *yes*, and use up/down to select *Status*.
3.   Press *yes*, and use up/down to select *Sensor.*
4.   Press *yes*, and use up/down to navigate through the parameters.
5.   When finished, press *no* several times to return to the to the status display.

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For an explanation of the parameters refer to the table in section 6.1.

6.3   Check the internet connection parameters

1.   Press *yes*, and use up/down to select *Service*.
2.   Press *yes*, and use up/down to select *Status*.
3.   Press *yes*, and use up/down to select *Internet connection.*
4.   Press *yes*, and use up/down to navigate through the parameters.
5.   When finished, press *no* several times to return to the to the status display.

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*For an explanation of the parameters refer to the table in section 6.1.*

6.4   Check the system revision information

1.   Press *yes*, and use up/down to select *Service*.
2.   Press *yes*, and use up/down to select *Revision*.
3.   Press *yes*, and use up/down to navigate through the parameters.
4.   When finished, press *no* several times to return to the to the status display.

Parameter	Description
ID	Unique Partnumber + Serial number combination of the PowerRouter.
Platform	Firmware release number of the platform module.
DC/AC	Firmware release number of the grid module.
Solar	Firmware release number of the Solar module.

6.5   Check the error history
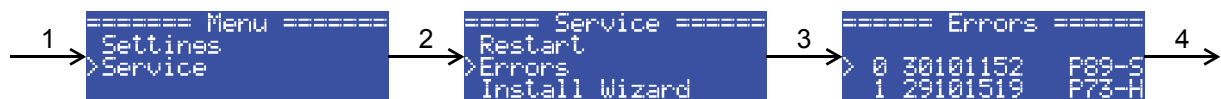
1.   Press *yes*, and use up/down to select *Service*.
2.   Press *yes*, and use up/down to select *Errors*.
3.   Press *yes*, and use up/down to navigate through the last ten error messages.
4.   When finished, press *no* several times to return to the to the status display.

6.6   Install wizard

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You should not use the install wizard. The install wizard is used by qualified installation personel to change settings of the PowerRouter. This part of the menu is password protected, to avoid unintended changes to the system.

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7 Troubleshoot

7.1 Troubleshooting

If you encounter difficulty with the operation of your PowerRouter, follow the steps below:

• Check the LED status (section 7.2).

• Check the error message on the LCD display.

• If the difficulty remains, contact your installer/dealer.

Collect the following information before you contact your installer or dealer:

• PowerRouter part number.

• PowerRouter serial number.

• Brief description of the problem.

• LED status.

• Check the system revision information.

• Check the error history.

7.2 Check the LED status

When an error has occurred the LEDs will either be OFF or FLASHING as follows:

PowerRouter state	Operational (blue)	Charging (blue)	Grid (blue)	Error (red)
Normal Operation	on	*	*	off
Standby	blinking	off	off	off
Not initialised	blinking	off	off	blinking
System check	off	on	*	off
Soft error	on	*	*	on
Hard error	off	off	off	blinking
Firmware update**	off	off	*	on
Validating the grid	*	*	blinking	*
Grid connected	*	*	on	*
Fast charging batteries	*	blinking	*	*
Charging batteries	*	on	*	*
Using battery power	*	off	*	*

* The LED can be on, blinking, or off.

** The PowerRouter is receiving / installing an update, this process may last for 25 minutes. The display will show a progress bar from 0% to 100%. During this time you must not do any other actions on the PowerRouter.

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The charging LED is only active if a battery extension module is installed.

the PowerRouter